

Deaths and Hospitalizations Related to Atrial Fibrillation, 1999–2001

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Atrial fibrillation (AF) is a common cardiac disorder involving sustained heart rhythm disturbance and affecting an estimated 2.2 million Americans, primarily those ages 65 and older.¹ It is a major risk factor for stroke, the third leading cause of death in the nation and in Rhode Island. Since 1980, it has been recorded with increasing frequency as a contributing cause of death in national data.² In this report, statewide death and hospitalization data have been analyzed to describe the burden of AF among Rhode Island residents.

Methods. Multiple-cause mortality data from the state Office of Vital Records were analyzed for Rhode Island residents for the three-year period 1999-2001. (Data for 2001 are provisional and subject to change.) Deaths related to AF were defined as those with either an underlying or a contributing cause of death code in the range of I40 – I48 in the International Classification of Diseases, 10th revision (ICD-10). For all deaths, underlying cause was grouped as follows, based on ICD-10 codes: Atrial fibrillation (I40-I48), coronary heart disease (I20-I25), stroke (I60-I69), heart failure (I50), and all other causes.

Hospital discharge data from all acute care hospitals in Rhode Island were analyzed for the three-year period 1999-2001. Hospitalizations related to AF were defined as those with any diagnosis code, principal or additional, of 427.3 in the International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM). For all discharges, principal diagnosis was grouped as follows, based on ICD-9-CM codes: Atrial fibrillation (427.3), coronary heart disease (410-414, 429.2), stroke (430-434, 436-438), heart failure (428), and all other diagnoses.

Annual average rates of death and hospitalization, including age-specific, crude, and age-standardized, were calculated for 1999-2001 using 2000 Census data for Rhode Island. Age standardization employed the 2000 US standard population.³ Age-standardized hospitalization rates were also computed for the population ages 65 and older for comparison to national rates. All national data were extracted from published sources.¹

Results. Over the period 1999-2001, there were 1,293 deaths related to AF in Rhode Island, representing 4.4% of all deaths. There were 412 AF-related deaths (31.9%) in 1999, 424 (32.8%) in 2000, and 457 (35.3%) in 2001. Of those

deaths, 70 (5.4%) had AF as the underlying cause; the other 1,223 (94.6%) had AF as a contributing cause. The crude average annual rate of AF-related deaths was 41.1 deaths per 100,000 population, and the age-standardized rate was 33.7 per 100,000.

Most AF-related deaths were among the elderly; 96.3% were ages 65 and older, 84.5% were ages 75 and older. Age-specific death rates rose sharply and monotonically with age, from near zero for those under age 45 years to 973.0 per 100,000 among those ages 85 and older. (Figure 1) The majority (58.9%) of AF-related deaths occurred among women.

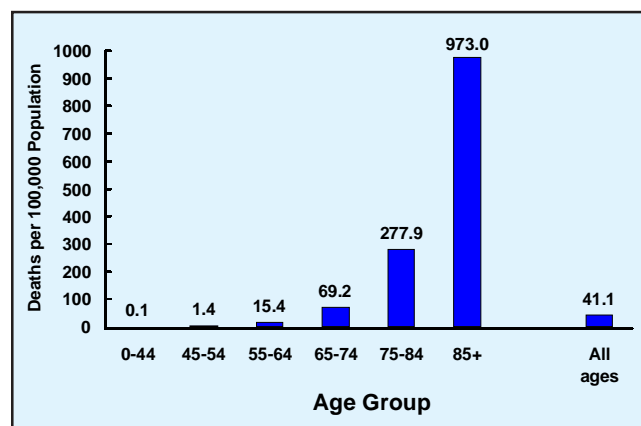


Figure 1. Deaths per 100,000 population (annual average) related to atrial fibrillation, by age group, Rhode Island, 1999-2001.

The most common underlying causes of death for AF-related deaths were the cardiovascular diseases (CVD). Other than AF itself (5.4%), other CVD causes included coronary heart disease (35.8% of AF-related deaths), stroke (9.1%), and heart failure (1.7%). (Figure 2)

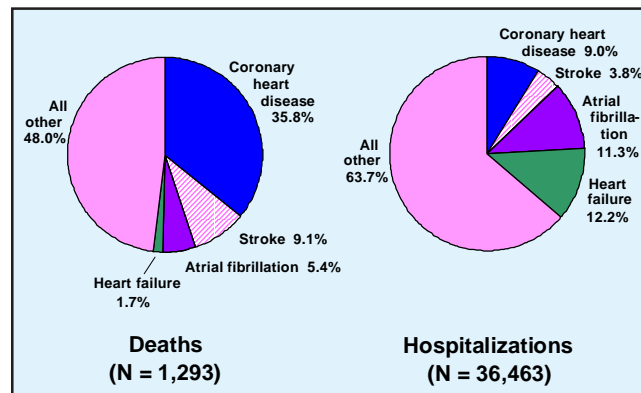


Figure 2. Underlying cause of death for deaths related to atrial fibrillation and principal diagnosis for hospitalizations related to atrial fibrillation, Rhode Island, 1999-2001.

Health by Numbers

Over the same period, there were 36,463 hospital inpatient discharges related to AF in Rhode Island hospitals, representing 10.6% of all hospitalizations and over 28 hospitalizations per death. There were 11,999 AF-related hospitalizations (32.9%) in 1999, 12,206 (33.5%) in 2000, and 12,258 (33.6%) in 2001. Of those hospitalizations, 4,114 (11.3%) had AF as the principal diagnosis; the other 32,349 (88.7%) had AF as an additional diagnosis. The crude average annual rate of AF-related hospitalizations was 11.6 hospitalizations per 1,000 population, and the age-standardized rate was 9.9 per 1,000.

As for AF-related deaths, most hospitalizations were among the elderly; 88.7% were ages 65 and older, 67.3% were ages 75 and older. Age-specific hospitalization rates rose monotonically but less sharply with age, from near zero for those under age 45 years to 150.9 per 1,000 among those ages 85 and older. (Figure 3) The slight majority (53.8%) of AF-related hospitalizations were women.

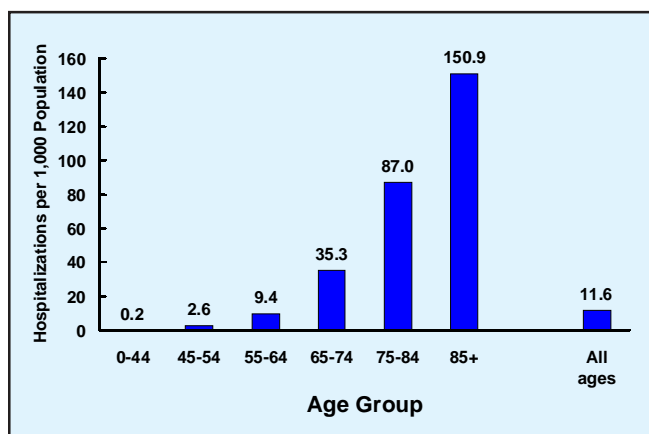


Figure 3. Hospitalizations per 1,000 population (annual average) related to atrial fibrillation, by age group, Rhode Island, 1999-2001.

The most common principal diagnoses for AF-related hospitalizations, other than AF itself (11.3%), included heart failure (12.2%), coronary heart disease (9.0%), and stroke (3.8%). (Figure 2)

Discussion. Atrial fibrillation imposes a substantial health burden on Rhode Island's population in terms of deaths and hospitalizations, especially among the elderly. For those ages

85 and older, nearly one percent of the population will die and over 15% will be hospitalized due to AF-related causes every year. AF-related deaths occur substantially more frequently and AF-related hospitalizations occur slightly more frequently here than in the nation generally. (Figure 4) These findings are subject to the caveat that Rhode Island's higher rates may be due in part to variations in reporting and coding practices. Nevertheless, AF is a treatable condition and, if identified early, an avoidable risk factor for stroke. Public health prevention efforts involving public and medical education can increase awareness of AF in support of early diagnosis and treatment of this condition.

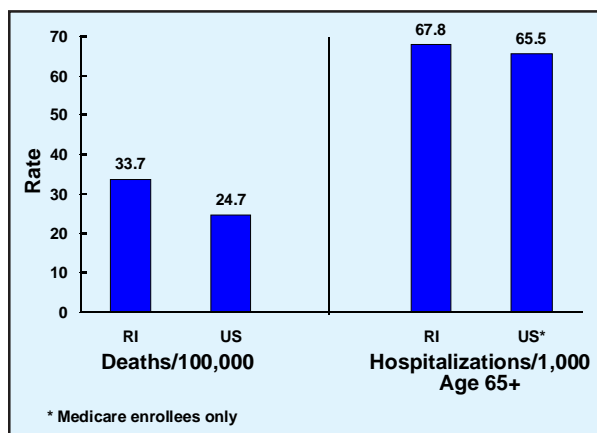


Figure 4. Rates of death and hospitalizations related to atrial fibrillation, Rhode Island (1999-2001 annual average) and United States (1999).

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References

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